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PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements in or relating to Automatically Closing Taps for
Filling Receptacles

We, ETABLISSEMENTS TOTTEREAU (S.A.R.L.), a body corporate organised under the Laws of France, of 68, Quai de la Râpée, Paris, France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 The filling of receptacles, particularly those which have only one orifice of small diameter such as casks, kegs, barrels and so on requires, in order to prevent overflowing, strict attention which is a source of annoyance and causes a loss of time to the person called upon to watch such operation.

A filling nozzle has been proposed in which the supply of liquid is automatically cut off when the nozzle is submerged in the liquid which has been discharged into a receptacle, the said nozzle including a piston-operated cut-off valve and being so constructed that when the lower end of the nozzle is submerged the liquid within the nozzle builds up a pressure on the top of the piston thereby moving the piston to close the valve and so prevent further discharge of liquid.

20 80 The object of the present invention is to provide an improved and simplified construction of tap which closes automatically when the liquid which it delivers into a receptacle reaches a predetermined level and which operates independently of the pressure of the liquid supply.

According to the invention there is provided in the cock body of the tap an air chamber having an outlet portion adapted to extend into the receptacle and so arranged that rising of the liquid in the receptacle compresses the air within the chamber, said chamber having a movable wall such as a piston, membrane or the like which is displaced or deformed when the air pressure within the chamber reaches a predetermined value, this displacement or deformation being utilised 45 for the direct or indirect control or movement of the closing member of the tap.

One example of a tap constructed according to the invention is shown in

the accompanying drawings, in which:—
Fig. 1 is a sectional elevation of the whole of the tap, 55

Fig. 2 is a section taken on the line A—A of Fig. 1, and

Fig. 3 is a view of the left hand external face of the casing surrounding the tap. 60

In this tap the liquid from the supply conduit arrives at 1 to be discharged into a receptacle 2 through the port 3 of the pipe 4, of which the diameter is appropriate to the orifice 5 of the receptacle which latter remains in communication with the atmosphere. 65

An air chamber 6 is provided in the tap; it includes a flexible membrane 7 and a conduit 8 connecting it to a chamber 9 of a suitably determined volume. 70

A lever 12 articulated on the ball joint 14 passes through the gap 15 of a spindle 16 integral with a valve 17 preferably made of an elastic material (rubber, fibre or the like); this lever 12 rests, in its initial position, on a stationary support 13. 75

When the liquid in the receptacle rises the air in the spaces 9, 8 and 6 will become somewhat compressed, and when the liquid reaches the level 10, the pressure in the chamber 6 will be sufficient to deform the flexible membrane 7 which, through the intermediary of the slide 11, exerts on the lever 12 a thrust perpendicularly to the plane of Fig. 1. 80

Under the influence of this thrust, the lever 12 moves in a horizontal plane to take up the position 12¹ and being, at that moment, deprived of its bearing on the support 13, takes up, by gravity, the position 12², carrying along in its fall the spindle 16 and bringing the valve 17 onto its seat at 17¹. 85

In order to prevent the liquid from tending to drag down the valve 17 in the open position, the spindle 16 of the valve is connected to a flexible membrane 18 90 tightened hermetically on the cock body by means of the cover 19.

This membrane receives at all instants conduit pressure and in consequence balances the thrust of liquid on the valve. 100 After the closing of the valve this 105

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arrangement allows likewise an easy manipulation of the latter by means of the handle 20 of lever 12 no matter what the pressure in the conduit may be. 5

5 In addition, the membrane 18 joined to the cock body and on the spindle 16 advantageously replaces a gland. — 70

As regards the chamber 6 the flexible membrane 7 similarly ensures watertightness and serves as a gland. 10

The tap is encased by a casing 21 which protects the external parts. For the passage of the lever 12, this casing is formed with an opening 22 designed so 15 as to permit the latter to take up its successive positions 12, 12¹, 12². This opening 22 is also formed with a trapezoidal recess 23 corresponding to the section, of the same shape, of the branch 20 of the lever 12 which passes through the casing and which permits, after the closing of the tap, if desired, of bringing the lever from the position 12² to the position 12¹ by hand. For this purpose, 20

25 the elastic valve 17 must be slightly crushed upon its seat through the intermediary of lever 12. It therefore exerts on the lever a vertical reaction from the bottom to the top which applies the latter 30 to the upper inclined face 24 of the recess 23.

The lever 12 and the valve 17 are thus locked in their position of closure and the tap cannot be opened except after a fresh 35 manual operation on the handle 20 of lever 12.

The chamber 9 is provided with a sufficient volume so that the liquid rising in this space creates a fairly high 40 reduction in the volume of air contained in the spaces 6, 8 and 9 and in consequence a suitable variation of the pressure of this air.

To provide the chamber 9 and ensure 45 for the liquid a vertical passage in the pipe 4 of which the section is limited by the diameter of the orifice of the receptacle, this pipe is slightly curved. The wall 25 is in addition made in the 50 form of a spout. This arrangement permits, if desired, of partially withdrawing the pipe 4 from the receptacle and verifying the discharge of liquid without any risk of splashing from the 55 latter.

The movable wall formed, in the example illustrated, by a flexible membrane could be formed by a piston or other similar member. 60

The tap constructed in conformity with the invention has the following essential advantages which constitute the characteristic features.

1. Faculty of filling without super- 65

vision or risk of overflowing, receptacles of all kinds and in particular those which have only one orifice of small diameter such as casks, kegs, barrels, and so on. 70

2. Absence of all joints between the receptacle and the tap. 75

3. Faculty of arranging, for the direct or indirect operation of the closing member a force practically as high as desired (this force is in fact proportional to the surface of the controlling membrane and this membrane disposed outside the receptacle can be suitably dimensioned). 80

4. Excellence of the transmission of power obtained between the liquid and the membrane controlling the lever, this transmission being ensured in a constant manner and which cannot be put out of order by the air, without the use of any delicate part susceptible of getting out of order such as a float pivot, bell crank or the like. 85

5. Elimination of all glands. 90

6. Elimination of any contact between the liquid and the parts effecting the closure. 95

7. Safety of operation and reduction in upkeep resulting from the advantages mentioned in 2 to 6. 100

8. Property of the valve of being maintained in the closed position by the weight of the lever itself the power of which is increased by the articulation system. 105

9. Faculty of a very easy complementary filling by manual operation of a lever and faculty of simultaneous control of the filling without splashing the liquid. 110

10. Faculty of a robust locking of the tap, and an easy removal of the latter with the feed piping. 115

11. Possibility of a construction requiring no precision work by reason of the high power available for controlling the closure. 120

12. Complete independence of the operation and tightness as regards the upward pressure.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Automatically closing tap for filling receptacles, wherein there is provided in the cock body of the tap an air chamber having an outlet portion adapted to extend into the receptacle and so arranged that rising of the liquid in the receptacle compresses the air within the chamber, 125 said chamber having a movable wall such as a piston, membrane or the like which is displaced or deformed when the air pressure within the chamber reaches a predetermined value, this displacement or 130

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deformation being utilised for the direct or indirect control or movement of the closing member of the tap.

2. Tap as claimed in Claim 1, wherein the air chamber which includes a wall formed by a flexible membrane is placed in communication through a conduit of small section, with a chamber wherein the air is compressed by the rise of liquid 10 in the receptacle.

3. Tap as claimed in Claim 1 or 2, wherein the deformation of the flexible membrane through the effect of the compression of the air, causes a lateral thrust 15 of this membrane on a lever with a ball joint which, thus escaping from the support holding it, turns by gravity around its ball and carries along with it in its fall a spindle, thus closing the valve of the tap 20 and ensuring the application of this valve upon its seat.

4. Tap as claimed in any of Claims 1 to 3, wherein the valve is balanced by a flexible membrane which renders it independent of the conduit pressure and serves at the same time as a packing 25 gland.

5. Tap as claimed in any of Claims 1 to 4, wherein the opening and closing of 30 the valve can be effected by manual

operation of a lever.

6. Tap as claimed in any of Claims 3 to 5, wherein the casing which allows of the passage of the lever is formed for this purpose with an opening of a shape such 35 that it permits of the locking of the tap in the closed position by making use of the resiliency of the valve.

7. Tap as claimed in any of Claims 1 to 6, wherein that part of the tap which is introduced into the receptacle is formed as a curved pipe comprising a chamber in which the air is compressed and permitting of the filling of receptacles with a small orifice whilst nevertheless 40 ensuring for the liquid a vertical discharge without splashing, even when this pipe is half out of the receptacle for the purpose of visually checking the filling. 45

8. Automatically closing tap, substantially as hereinbefore described with reference to the accompanying drawings. 50

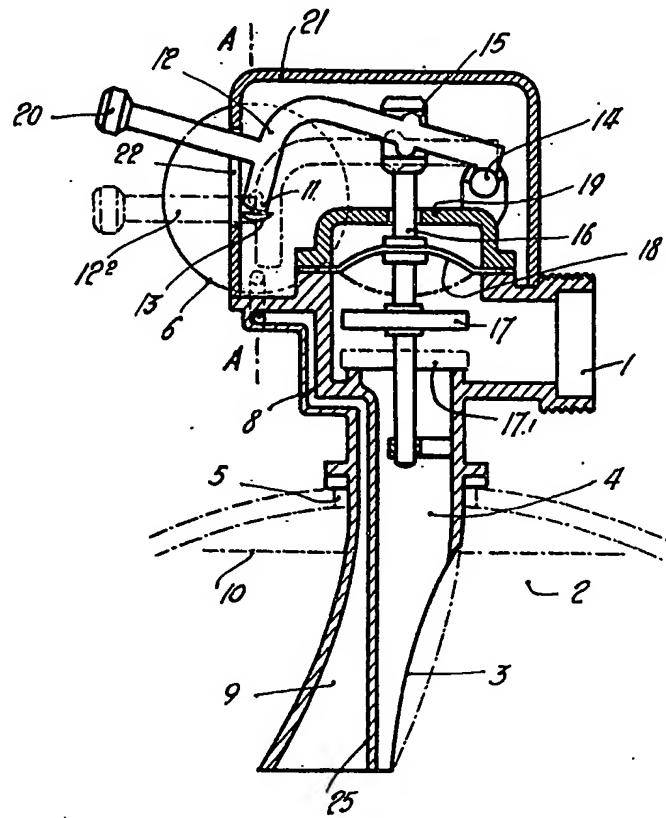
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1 SHEET

Fig. 1



(This Drawing is a reproduction of the Original on a reduced scale.)

Fig. 2

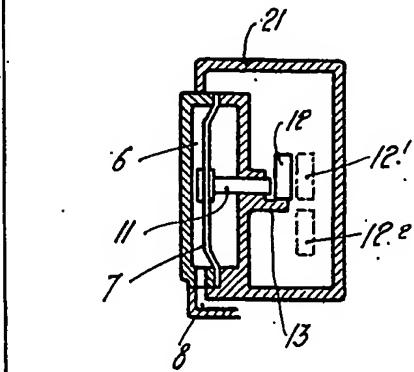
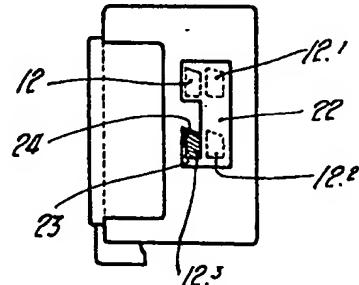


Fig. 3



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